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IMPLEMENTATION ON MOBILE & WIRELESS COMMUNICATIONS APPLICATIONS AND ADVANCE LTE

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Abstract:- The possibility of geolocating a Long Term Evolution (LTE) subscriber station based on the timing advance ranging parameter within the network signal internals is investigated in this thesis. The basic approach to geo location based on radial distances from multiple base stations is outlined. Specifics of the timing parameters used during LTE network entry are examined as they relate to calculating these distances. Computer simulation is used to demonstrate expected geo location accuracy in multiple base station networks when estimating likely locations of subscriber stations on a two-dimensional coordinate mapping system.

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[1] INTRODUCTION

Mobile & wireless communications applications have a clear impact on improving humanity wellbeing. From cell phones to wireless internet to home & office devices, most of applications are converted from wired into wireless communication. Clever & improve wireless communication backgrounds represent prospect technology & evolutionary development step in vehicular, homes, industrial & transportation systems. A very appealing research area in these environments has been wireless ad hoc, sensor & mesh networks.

Fig 1 Mobile & wireless communications networks

Mobile & wireless communications networks rely on especially motorized processing nodes that intelligence surrounding environment temperature, motion or chemical hazards, etc. Radio frequency transceiver nodes of such networks require design of transmitter & receiver equipped within high performance building blocks including antennas, power & low noise amplifiers, mixers & voltage controlled oscillators.

Wireless communications is a type of data communication that is performed & delivered wirelessly. This is a broad term that incorporates all procedures & forms of connecting & communicating between two or more devices using a wireless signal through wireless communication technologies & devices. This network normally perform through electromagnetic signals that are transmit by an allowed device within physical environment or atmosphere. Sending device could be a sender or an intermediate device within ability to propagate wireless signals. Communication between two plans happen when purpose or receiving middle device captures creating a wireless communication bridge between sender & receiver device. Wireless communication has various forms, technology & delivery methods including:

1. Wireless network communication
2. Mobile communication
3. Bluetooth communication
4. Satellite communication
5. Infrared communication

[2] LTE WIRELESS COMMUNICATION

Long Term Evolution is a wireless communication standard originally developed to provide high-speed data for mobile phones & data terminals. LTE expands on 4G wireless high-speed point to multipoint wireless communications. LTE offers mobile telecommunication providers ability to increase broadband wireless backhaul & allow for future expansion. LTE specification provides downlink peak rates of 300 Mbit/s, uplink peak rates of 75 Mbit/s

Utilities have opportunity to acquire licensed wireless frequencies from FCC & third party owners of spectrum. LTE could provide coverage areas in a macro cell of greater than 20+ miles. Ideal wireless communication coverage areas could be up to 11 miles within good coverage. LTE sites are typically on communication towers that are spaced out geographically.

[3] PROBLEM IDENTIFICATION

In tradition work the lot of discussion on LTE has been made but there are several limitation of traditional work. They have made simulation of LTE based working nodes in order to detect the maximum coverage area. But they have not considered the three dimensional aspects. In proposed work the simulation for LTE would be three dimensional. Moreover the proposed work would also simulate the bandwidth in case of direct and indirect LTE based communication system.

[4] OBJECTIVE

The main objective of research is as follow:

1. Investigation the pros & cons of advance LTE compare to traditional generation.
2. Simulation of maximum converge area in advance LTE
3. Objective to analysis the bandwidth in case to direct indirect of advance LTE network and to simulate the performance in case of uploading and downloading.
4. To make 3d simulation of Advanced LTE and detect the optimum angle and distances.

[5] PROPOSED WORK

The Proposed work of research is as follow:

1. Investigation the pros & cons of advance LTE compare to traditional generation.
2. Simulation of maximum converge area in advance LTE
3. To make comparison of traditional and 3d simulation of Advanced LTE.
4. To simulate the performance in case of uploading and downloading and to analysis the bandwidth in case to direct indirect of advance LTE network.

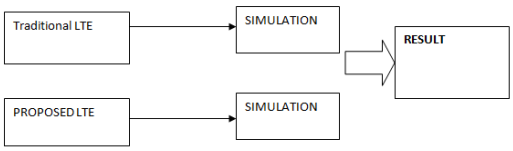

Fig 2 Proposed Model 1

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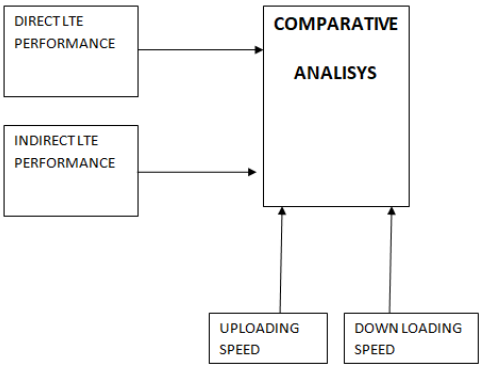

Fig 3 Proposed Model 2

[6] RESULT

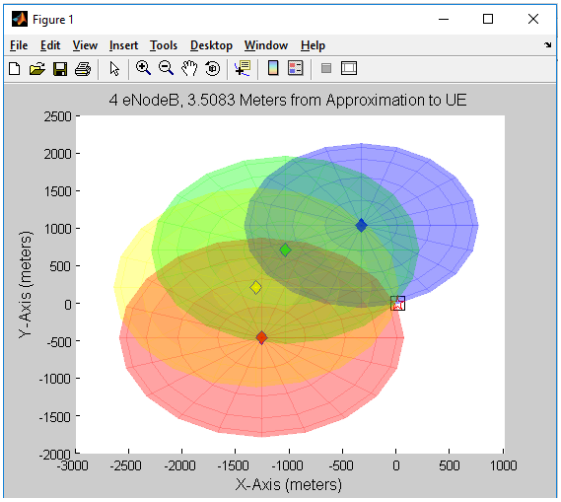

Fig 4 4eNodeB, 3.5083 Meters from approximation to UE

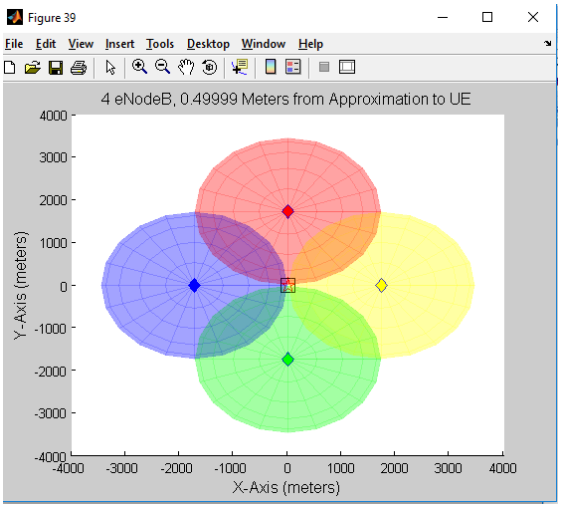

Fig 5 4eNodeB, 0.49999 Meters from approximation to UE

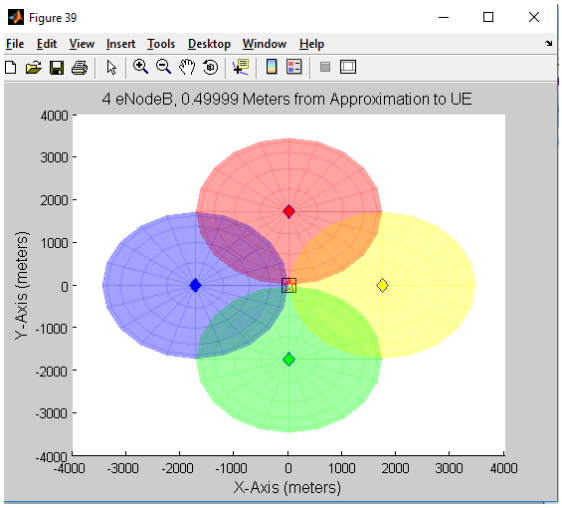

Fig 6 4eNodeB, 0.49999 Meters from approximation to UE

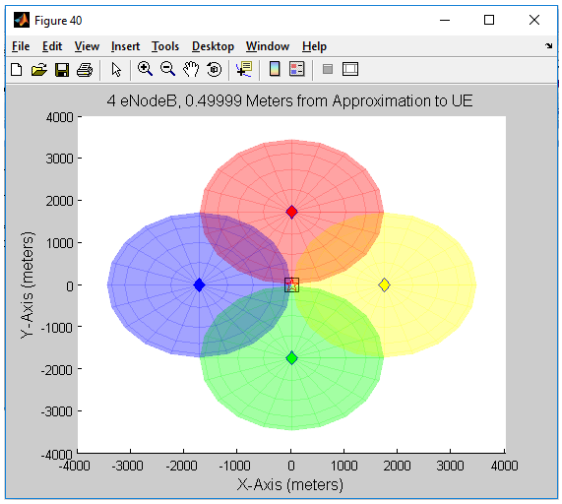

Fig 7 4eNodeB, 0.49999 Meters from approximation to UE

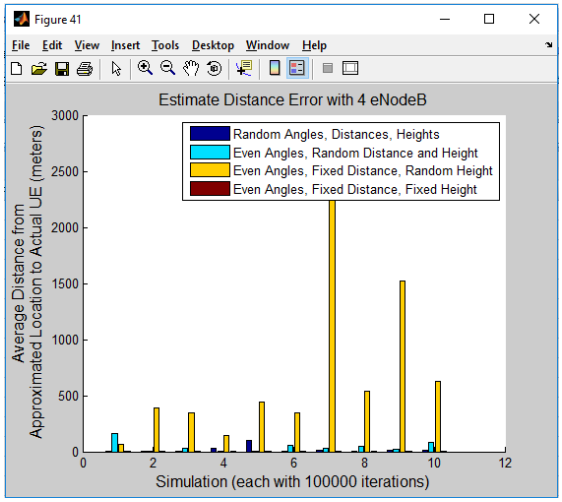

Fig 8 4eNodeB, 0.49999 Meters from approximation to UE

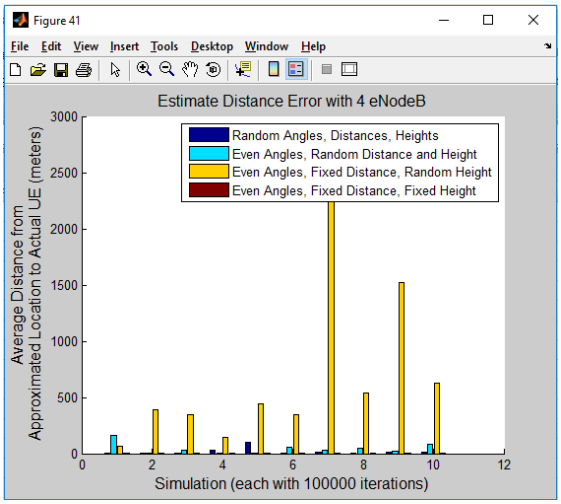

Fig 9 Estimate Distance Error With 4 eNodeB

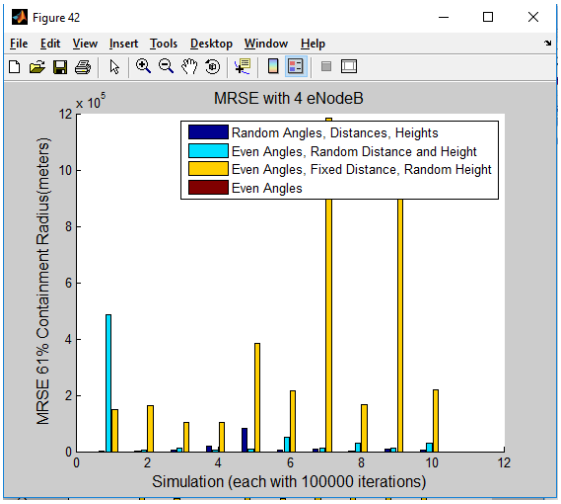

Fig 10 MRSE with 4 eNodeB

[7] CONCLUSION

The possibility of geolocating a Long Term Evolution (LTE) subscriber station based on the timing advance ranging parameter within the network signal internals is investigated in this thesis. The basic approach to geo location based on radial distances from multiple base stations is outlined. Specifics of the timing parameters used during LTE network entry are examined as they relate to calculating these distances. Computer simulation is used to demonstrate expected geo location accuracy in multiple base station networks when estimating likely locations of subscriber stations on a two-dimensional coordinate mapping system.

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